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Koo

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(54) **CHAIR EQUIPPED WITH LUMBAR SUPPORT UNIT**

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(52) **U.S. Cl.** **297/284.7**; 297/284.4
(58) **Field of Search** 297/284.4, 284.1, 297/452.1, 452.3, 354.1, 300.1, 284.7

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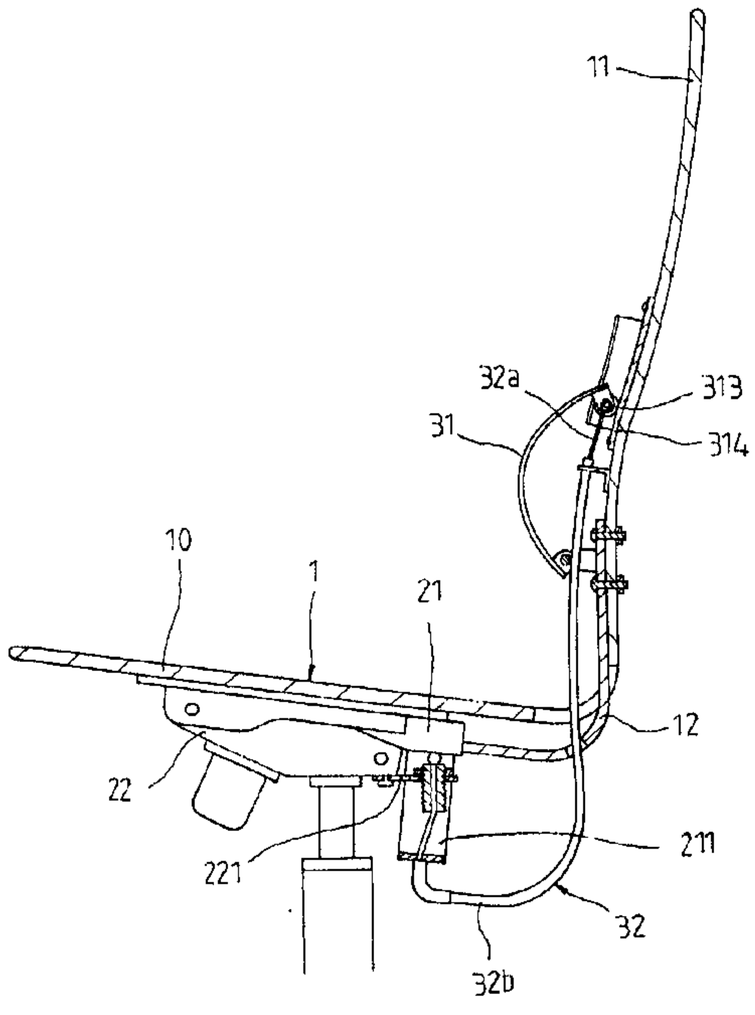
(57) **ABSTRACT**

A chair equipped with a lumbar support unit is disclosed. The lumbar support unit includes a lumbar plate attached to a lower portion of a tiltable backrest part, and an actuating connector comprising a connecting wire which is connected at one end to an upper end of the lumbar plate and is connected at the other end to a chair frame supporting the seat and back parts, and a connecting tube surrounding the connecting wire, which is positioned at one end at a location downwardly spaced from the one end of the connecting wire, and is connected at the other end to a movable frame. The lumbar plate is automatically protruded forward to snugly support a lumbar region of a user when the back part is tilted rearwardly. The chair can afford convenient operation and protection of a lumbar region of a user.

8 Claims, 8 Drawing Sheets



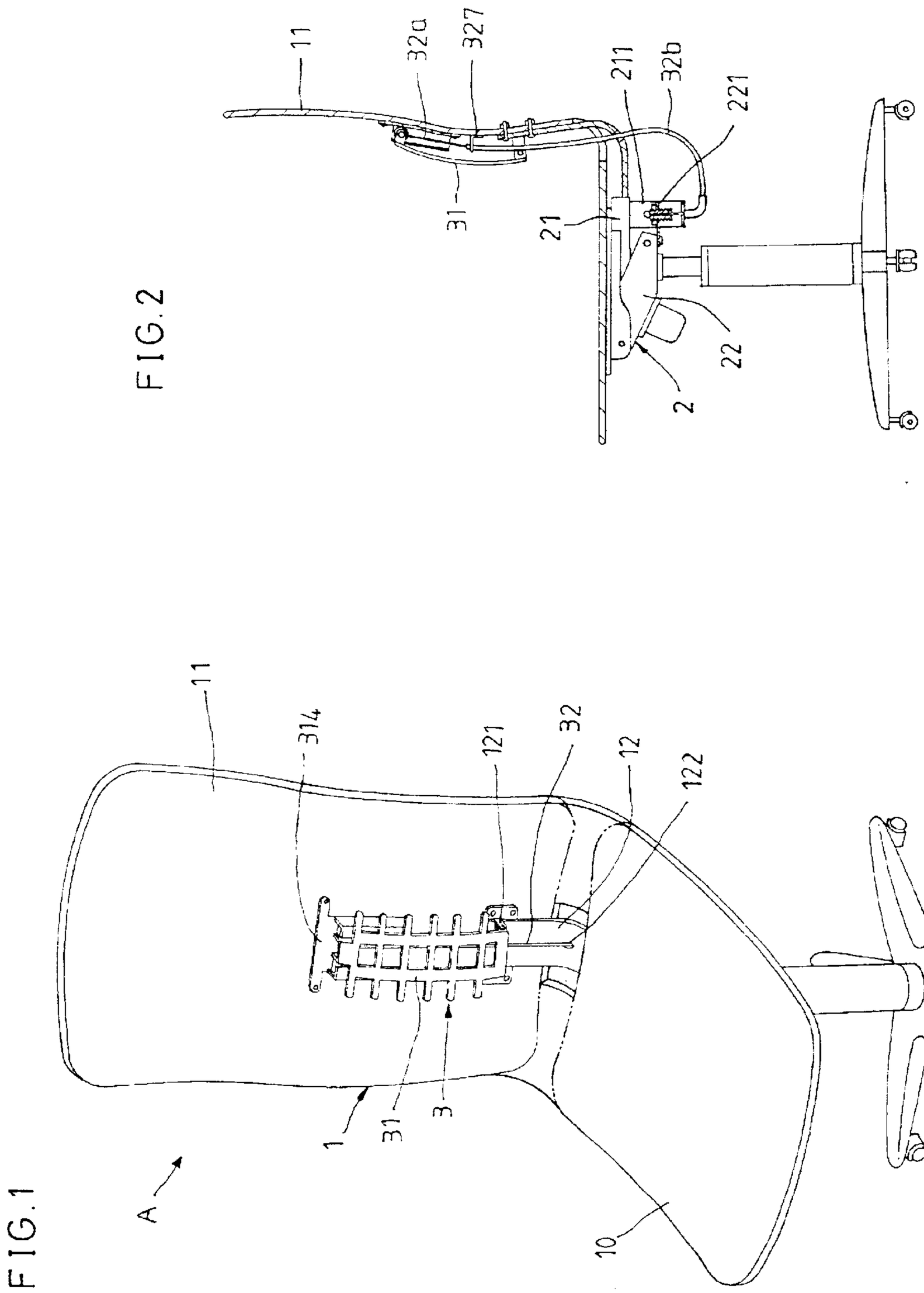


FIG.1

FIG.2

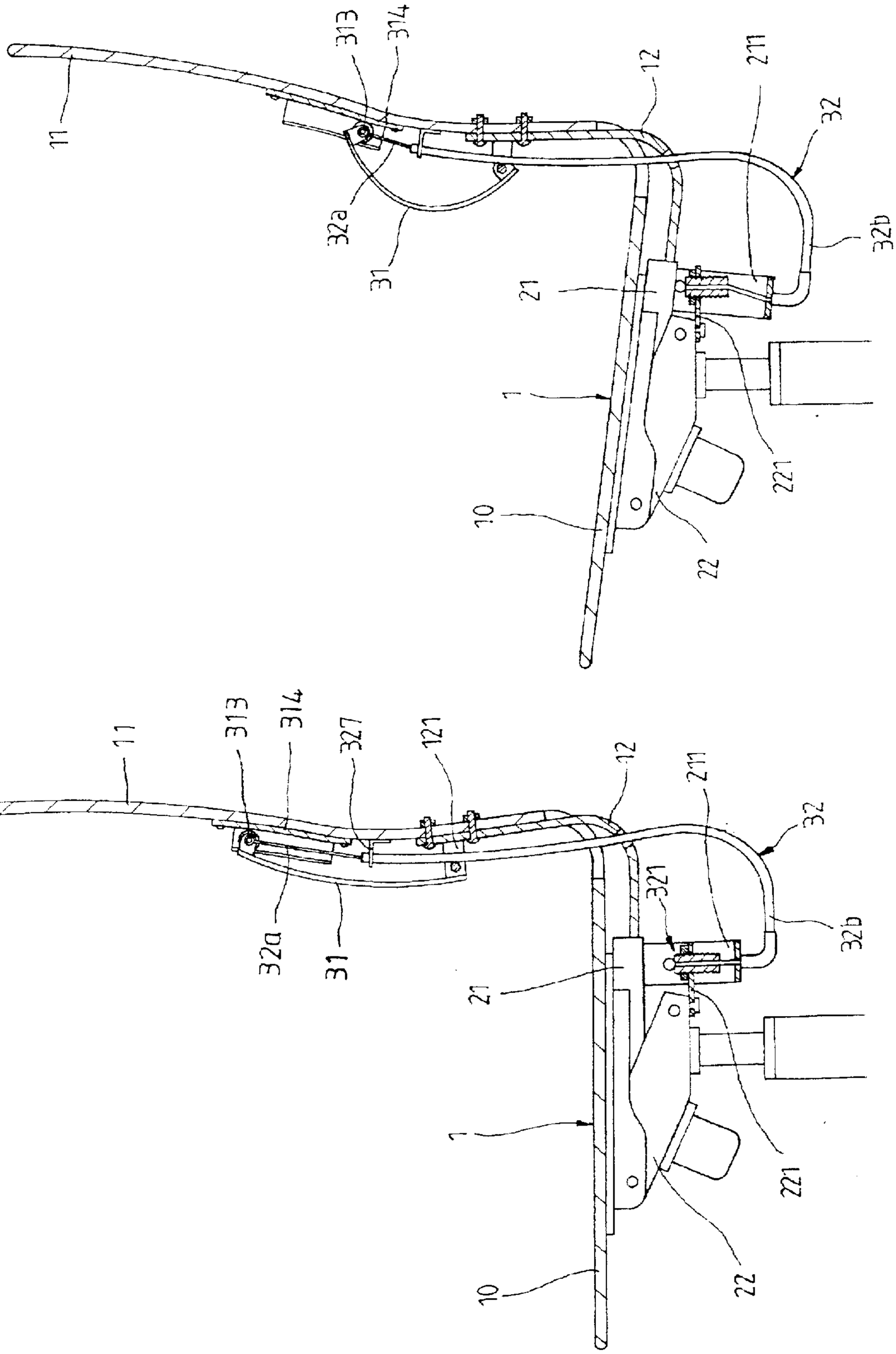

11
313
314
12
211
32
32a
31
32b
21
1
10
221
22

FIG.3a

11
313
314
327
121
12
211
32
321
32a
31
32b
21
1
10
221
22

FIG.3b

FIG.4

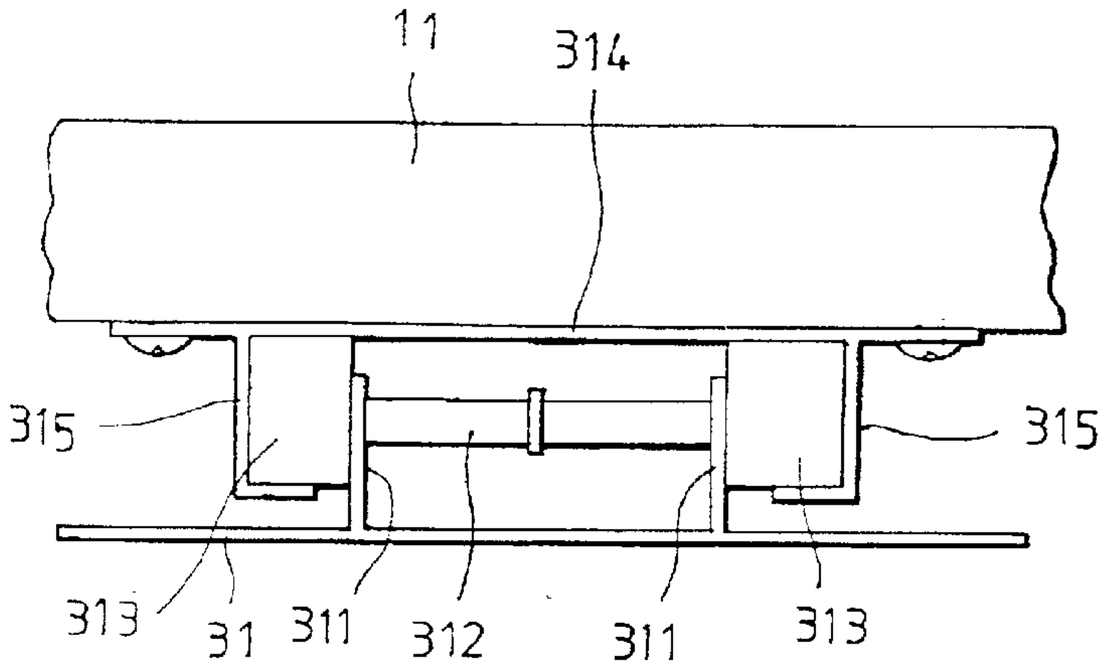


FIG.5

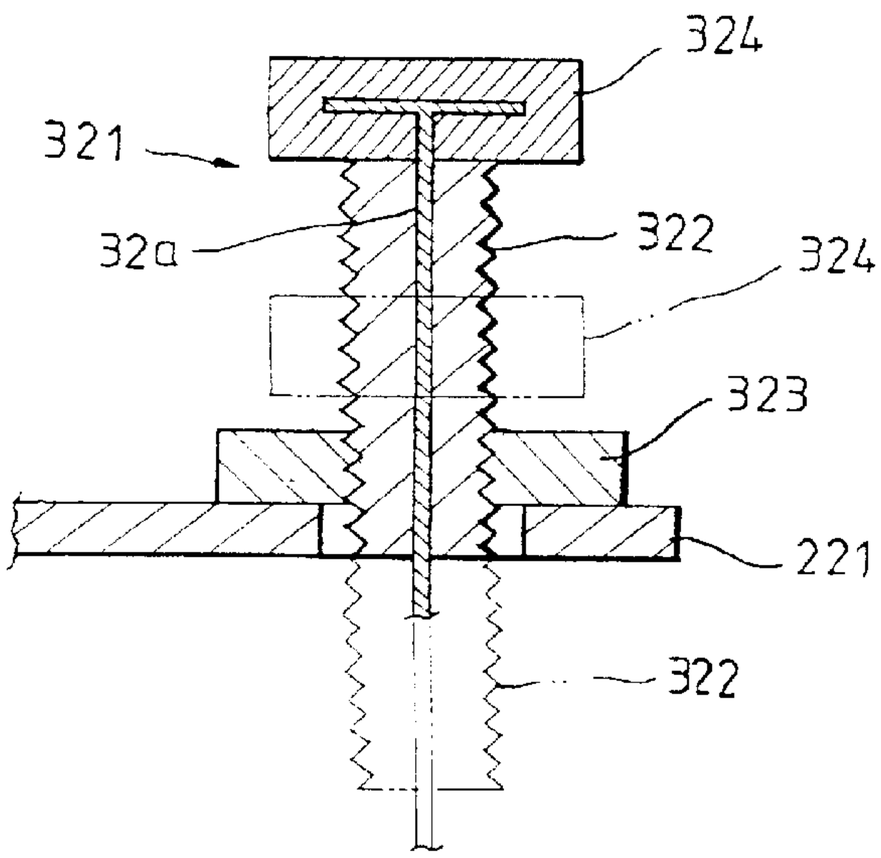


FIG.6

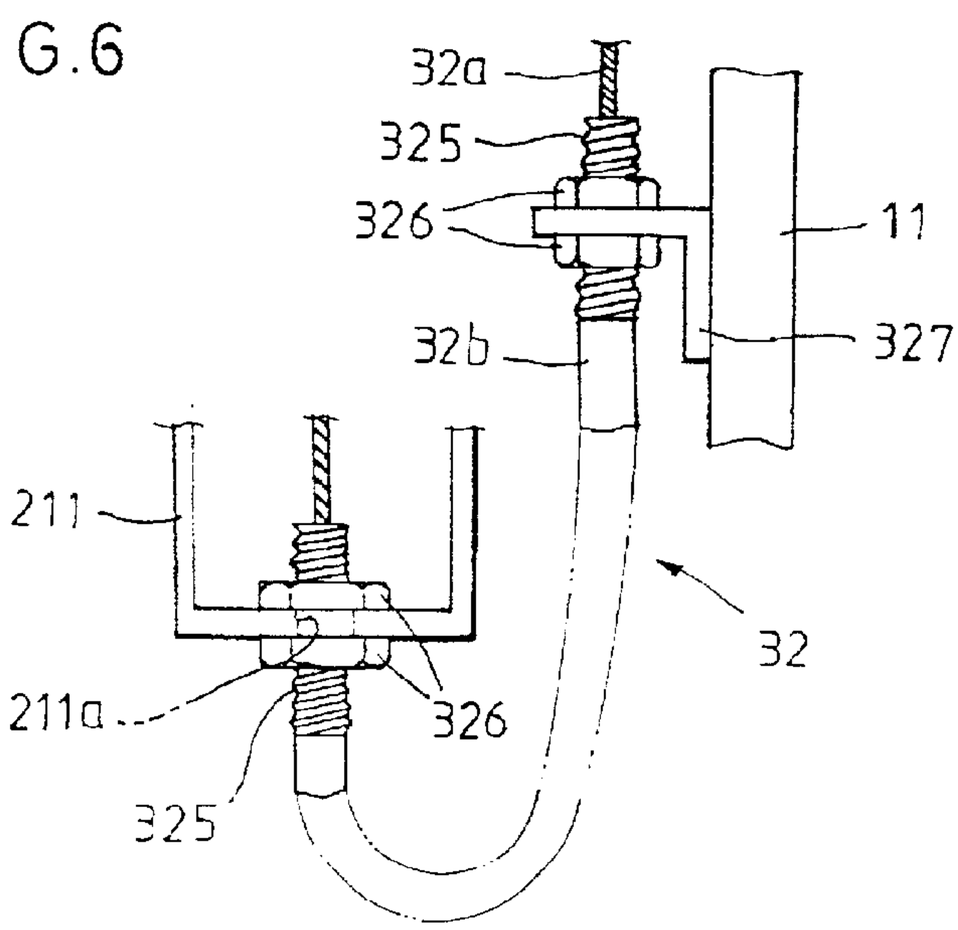


FIG.7a

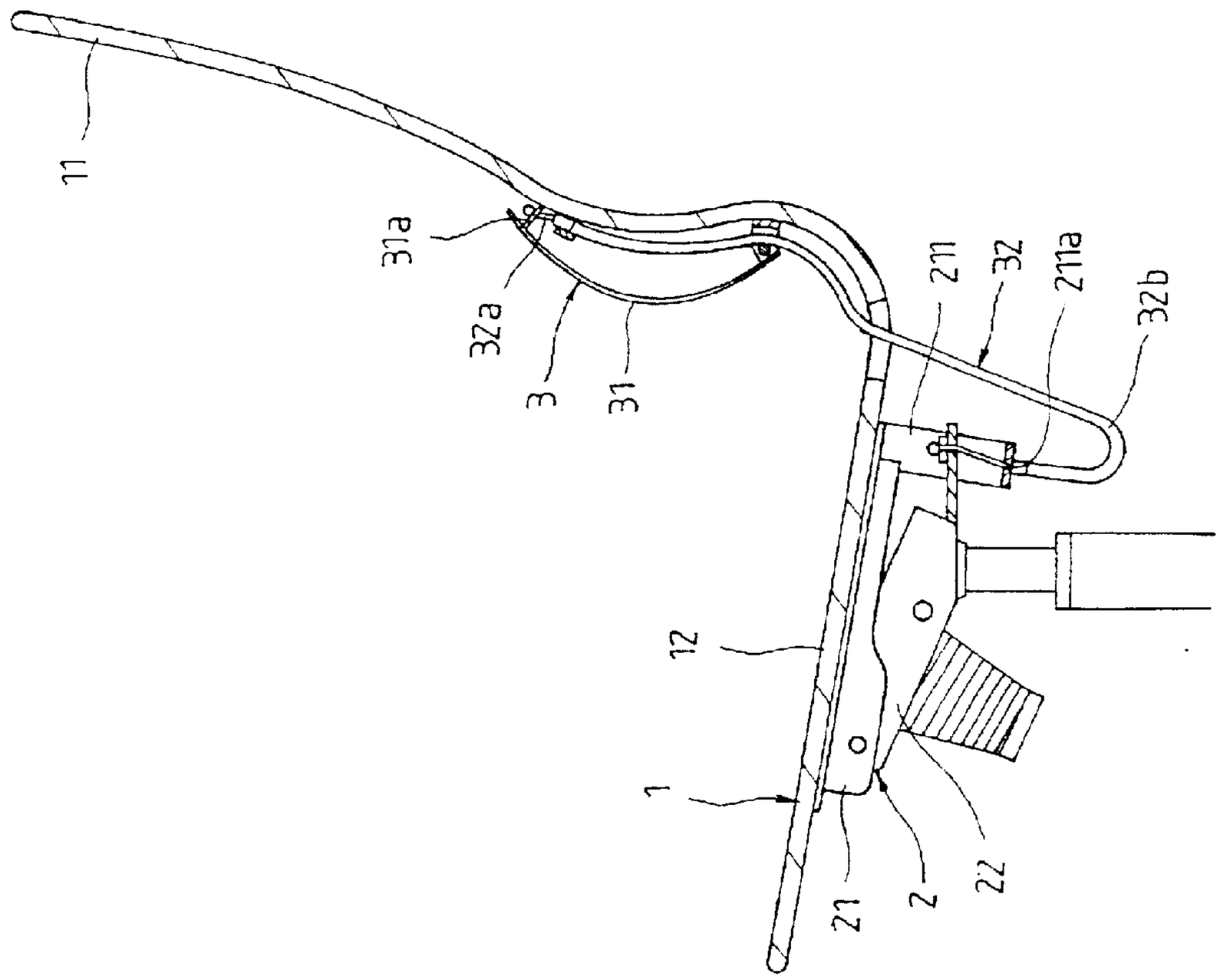
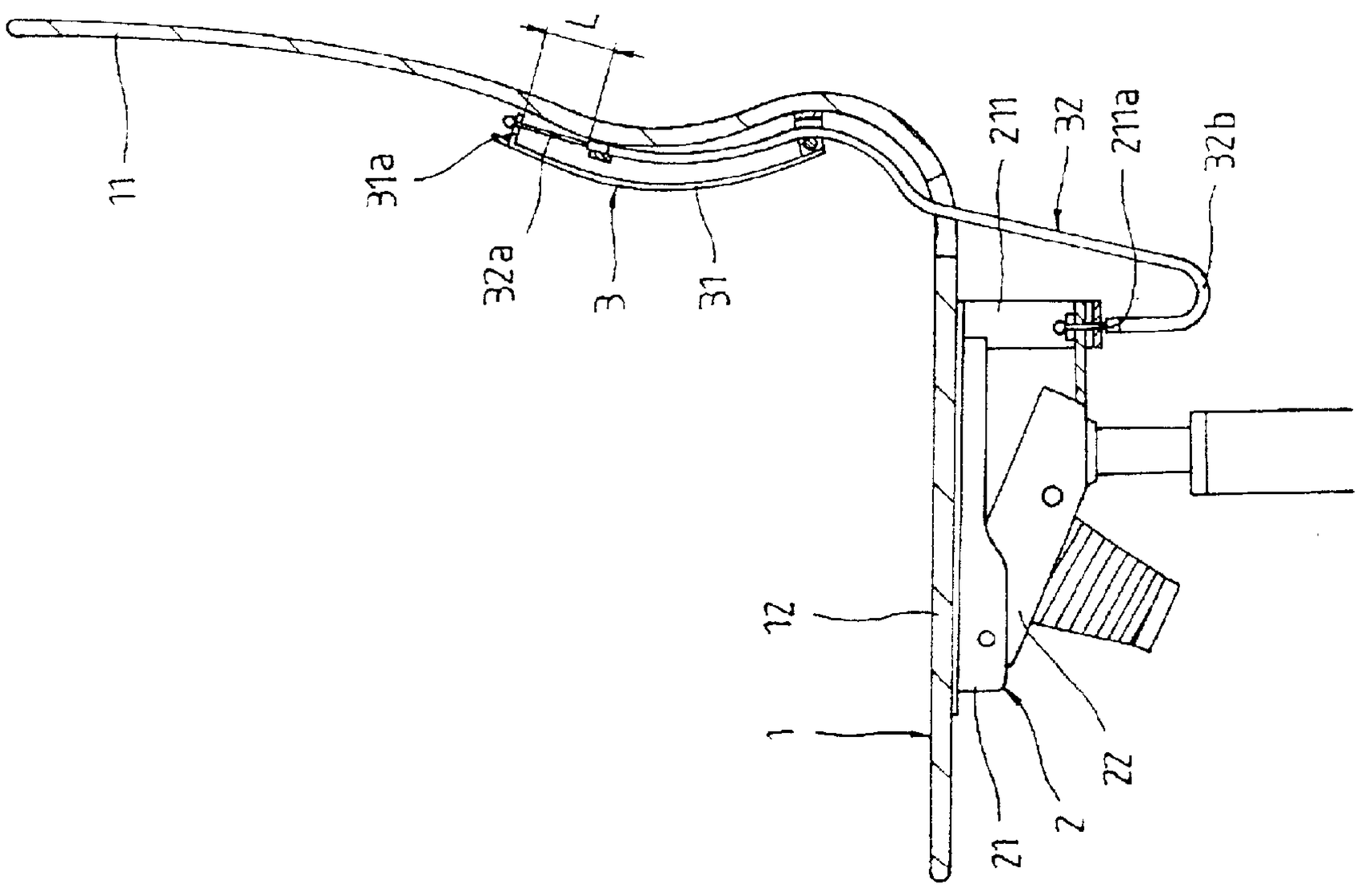

11
31a
32a
3
31
211
32
211a
32b
12
1
21
2
22

FIG.7b


L
11
31a
32a
3
31
211
32
211a
32b
12
1
21
2
22

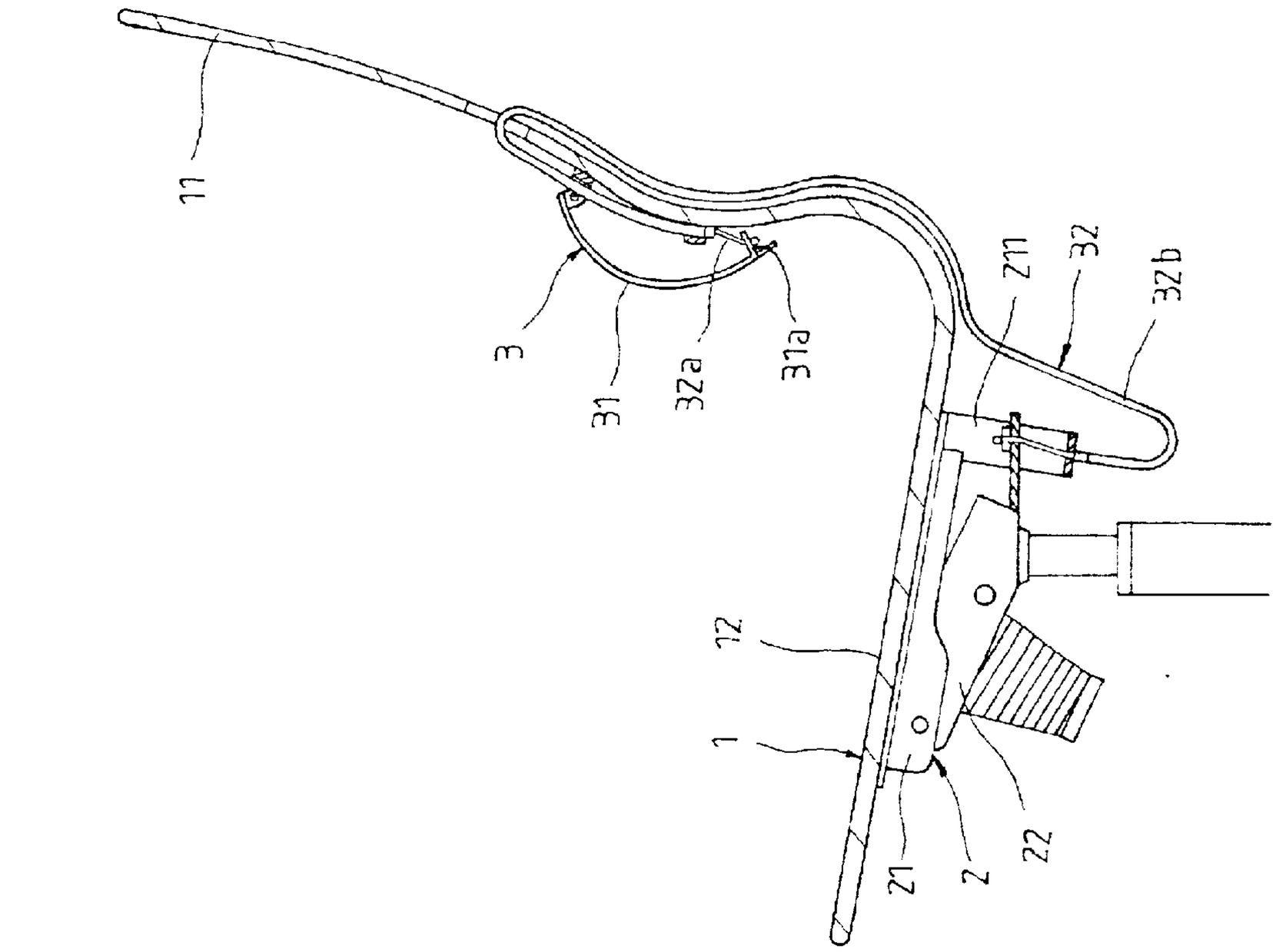

11
3
31
32a
31a
211
32
32b
12
1
21
2
22

FIG.8a

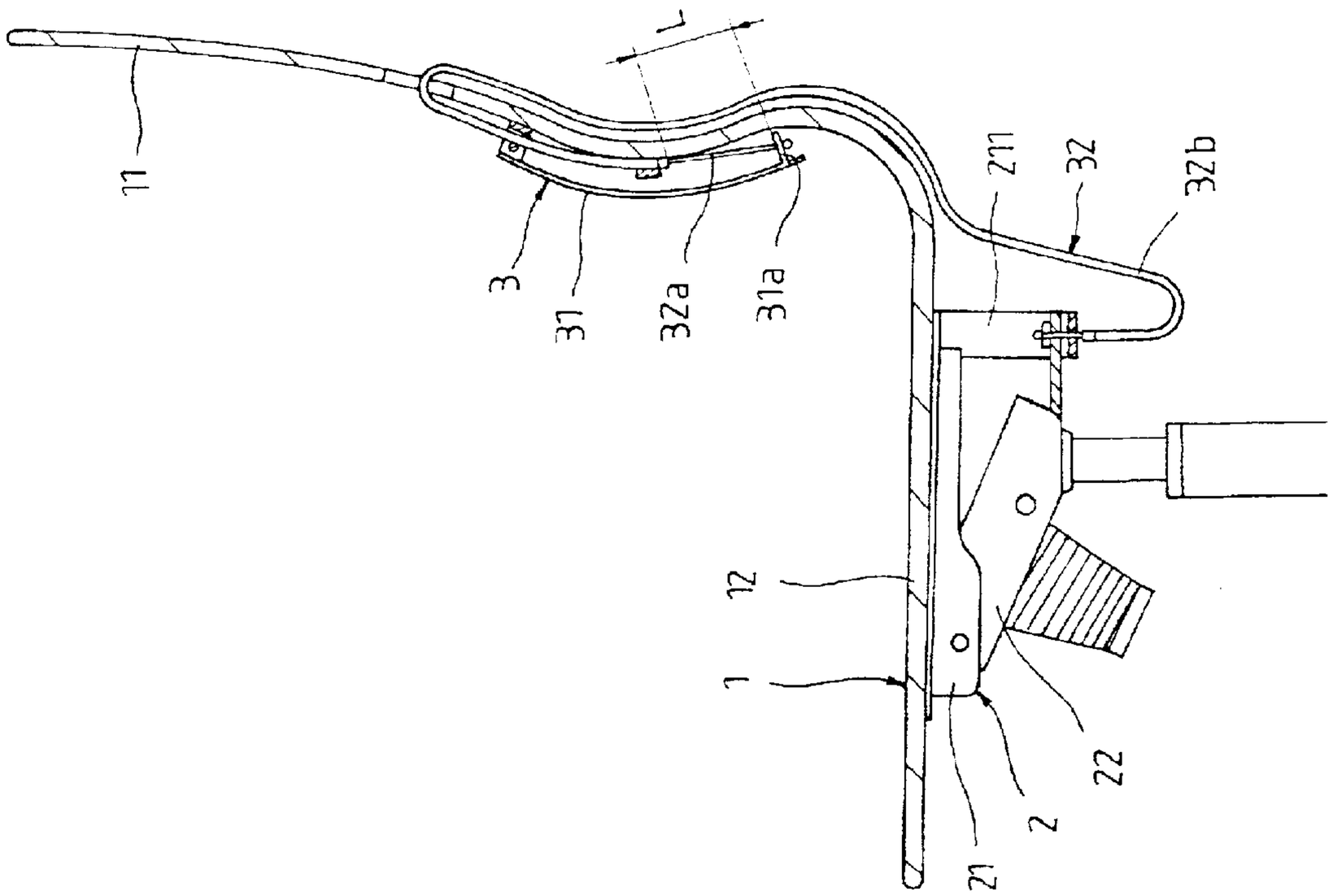
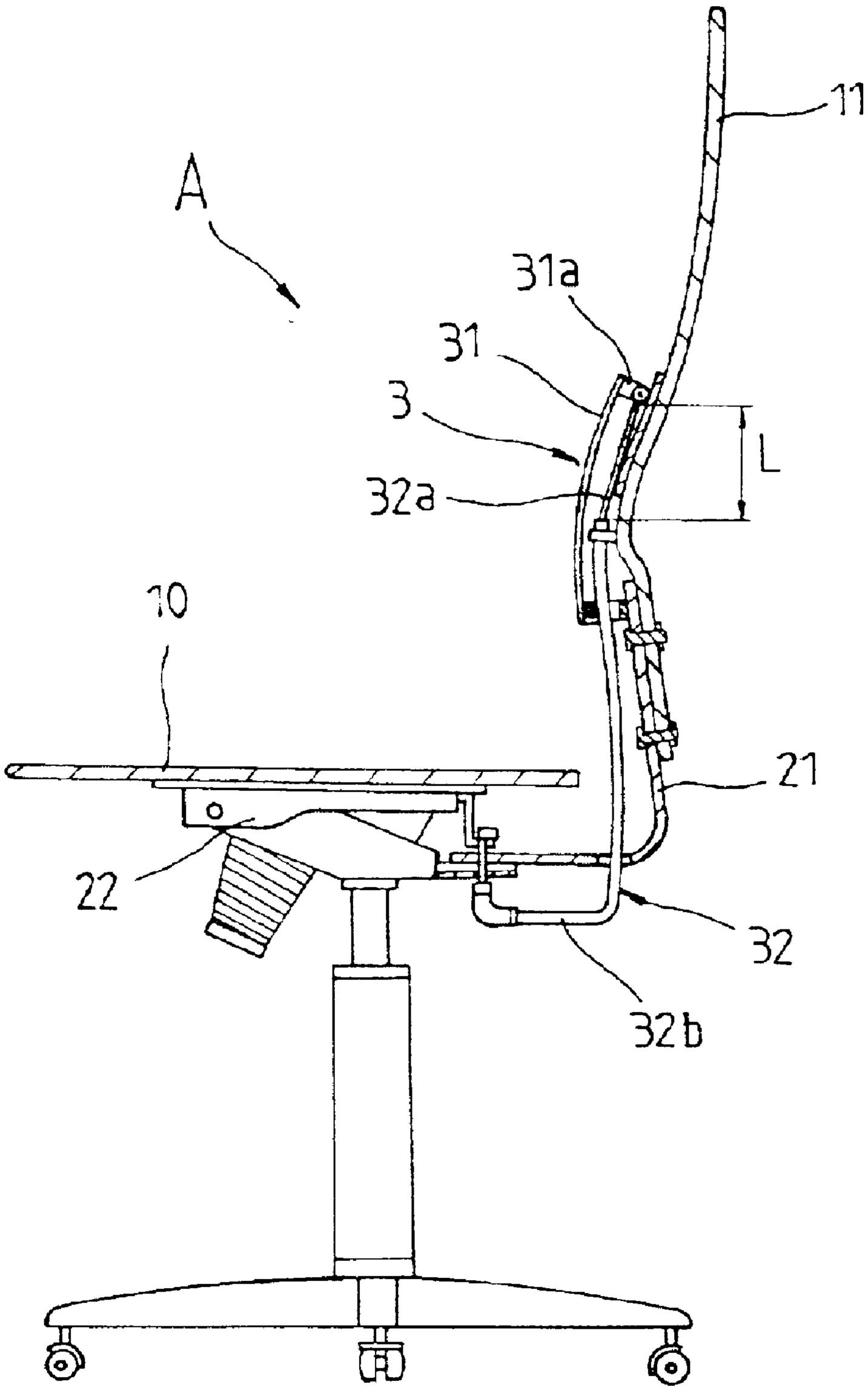

L
11
3
31
32a
31a
211
32
32b
12
1
21
2
22

FIG.8b

FIG.9



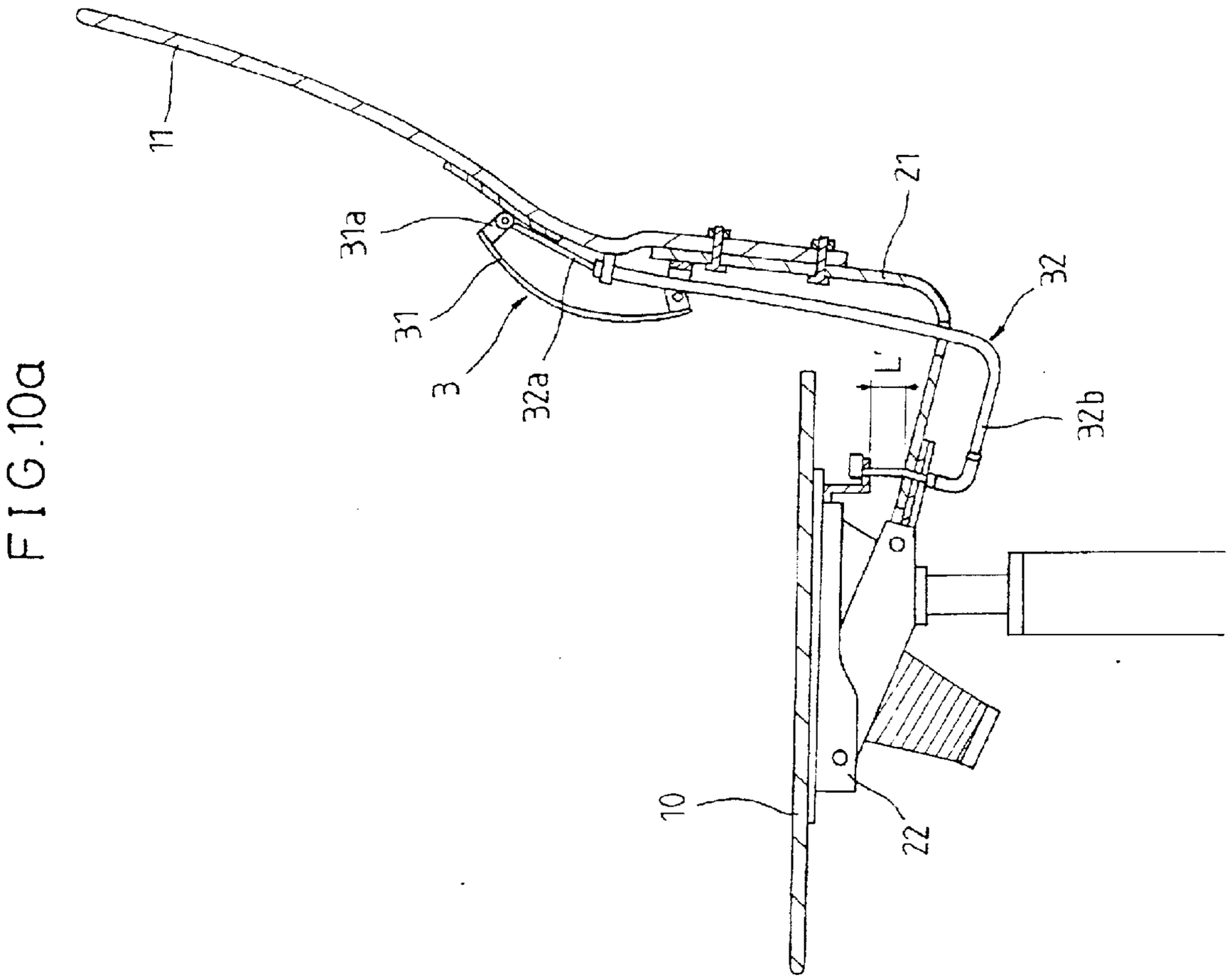


FIG.10a

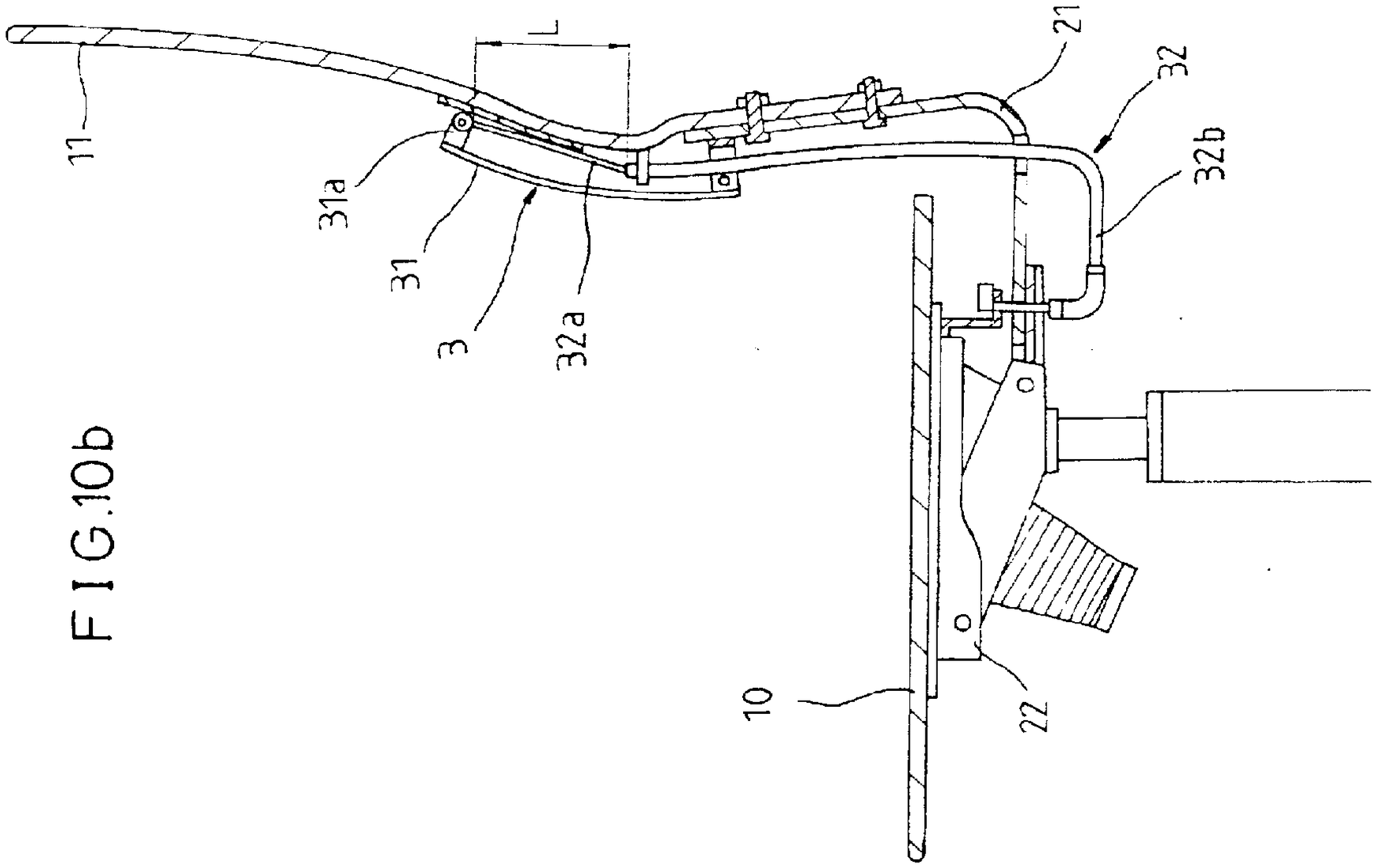


FIG.10b

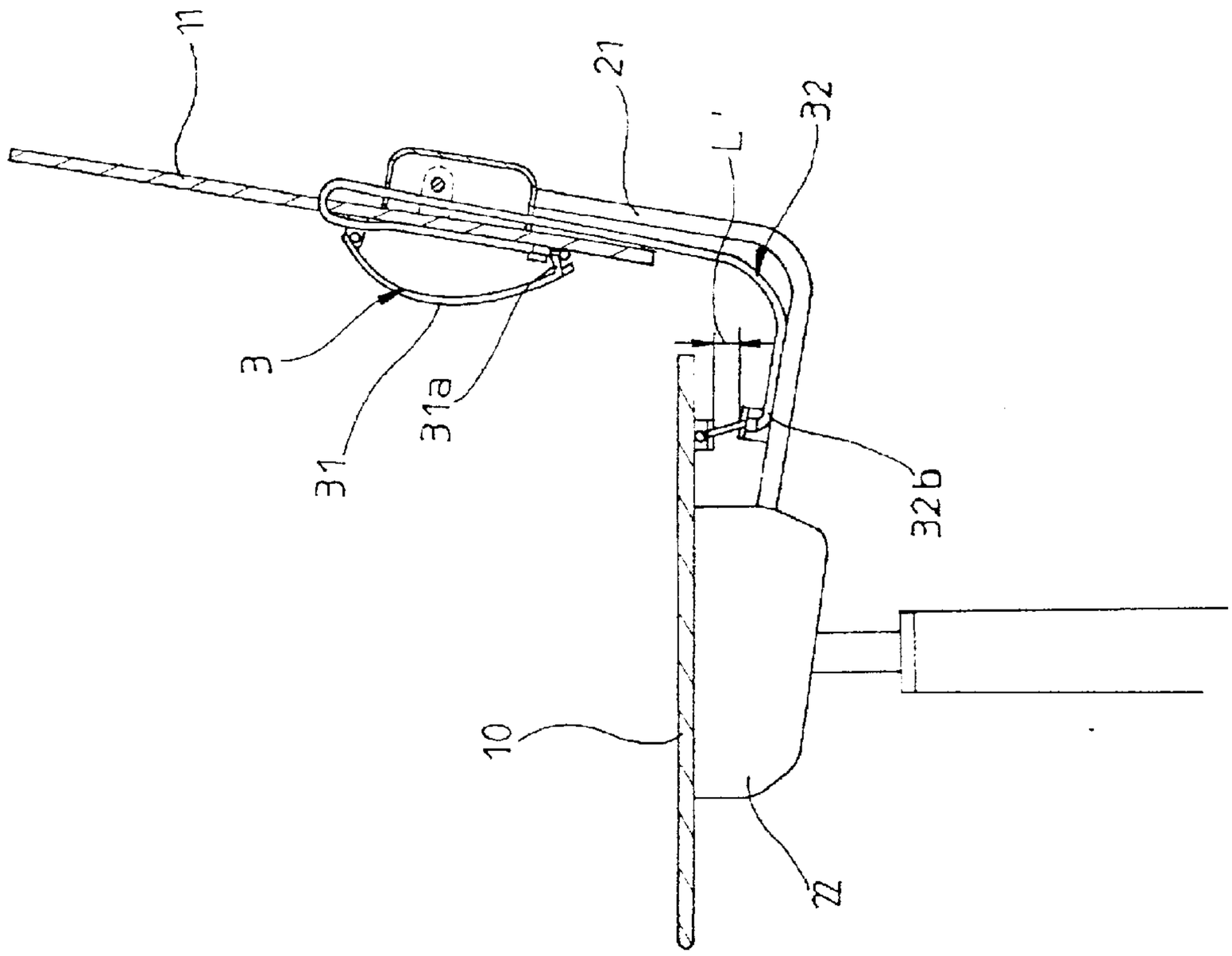


FIG.11a

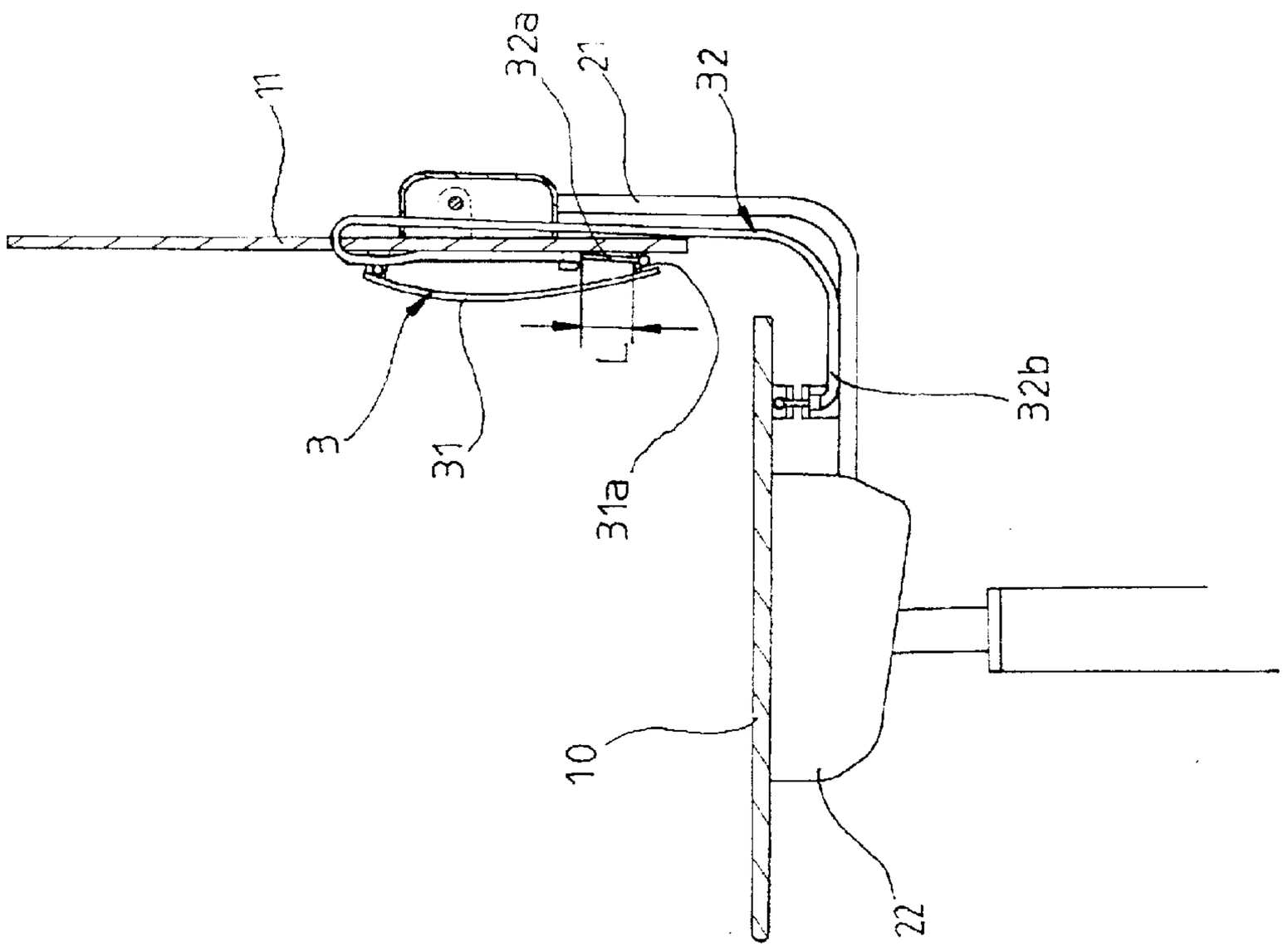


FIG.11b

CHAIR EQUIPPED WITH LUMBAR SUPPORT UNIT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a chair, and more particularly to a chair equipped with a lumbar support unit in which the lumbar support unit attached to a lower portion of a backrest part is automatically protruded or bulged forwardly to snugly support a lumbar region of a user when the backrest part is tilted rearwardly, and restored to its normal position when the backrest part is erected, thereby affording convenient operation and protection of a lumbar region of a user.

2. Description of the Prior Art

In general, a chair, which is equipped with a backrest adapted to be tilted rearwardly when a user inclines the backrest rearwardly to take a rest, and to be restored to its normal position when the user erects his/her upper body to work, is widely used. In chairs including seats and backrests which are integrally operated as well as such chairs having tilting backrests, when a user stretches his/her upper body rearwardly, a backrest is tilted rearwardly by the rearward movement of the upper body. In the stretched position, since there is left a space between the lumbar region of the user and the chair without an additional lumbar support portion, the user cannot take comfortable rest. Even though there is an additional lumbar support part provided on a backrest, a user must manipulate a handle to operate the additional lumbar support part into a desired position regardless of tilting and restoring operations of the chair. Accordingly, the chair is inconvenient to users.

SUMMARY OF THE INVENTION

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a chair equipped with a lumbar support unit which is adapted to be automatically protruded depending on an inclination of the chair to more comfortably support a lumbar region and thus spine of an user, thereby providing the user with improved convenience, comfortable rest and health enhancement.

It is another object of the present invention to provide a chair equipped with a lumbar support unit, which can be controlled in its protruding degree by a user.

It is still another object of the present invention to provide a chair equipped with a lumbar support unit, which is adapted to be easily operated.

In order to accomplish the above objects, the present invention provides a chair equipped with a lumbar support unit, in which the lumbar support unit includes a lumbar plate attached to a lower portion of a tiltable backrest part, and an actuating connector comprising a connecting wire which is connected at its one end to an upper end of the lumbar plate and is connected at its other end to a chair frame supporting the seat and back parts, and a connecting tube surrounding the connecting wire, which is positioned at one end at a location downwardly spaced from the one end of the connecting wire, and is connected at the other end to a movable frame.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. **1** is a schematic perspective view of a chair equipped with a lumbar support unit according to a first embodiment of the present invention;

FIG. **2** is a schematic longitudinal cross-sectional view of the chair of FIG. **1**;

FIG. **3***a* is a cross-sectional view showing an operation of the lumbar support unit when a seat-back shell is tilted rearwardly;

FIG. **3***b* is a cross-sectional view showing an operation of the lumbar support unit when a seat-back shell is restored to its normal position;

FIG. **4** is an enlarged cross-sectional view of an upper part of the lumbar support unit of FIG. **1**;

FIG. **5** is a cross-sectional view of wire control means coupled to an end of a connecting wire;

FIG. **6** is an enlarged view showing both ends of a connecting tube, which are locked;

FIG. **7***a* is a cross-sectional view of a chair equipped with a lumbar support unit according to a second embodiment of the present invention, in which a seat-back shell is tilted rearwardly;

FIG. **7***b* is a similar view to FIG. **7***a*, in which the seat-back shell is restored;

FIG. **8***a* is a cross-sectional view of a chair equipped with a lumbar support unit according to a third embodiment of the present invention, in which a seat-back shell is tilted rearwardly;

FIG. **8***b* is a similar view to FIG. **8***a*, in which the seat-back shell is restored;

FIG. **9** is a cross-sectional view of a chair equipped with a lumbar support unit according to a fourth embodiment of the present invention;

FIG. **10***a* is a cross-sectional view showing an operation of the lumbar support unit of FIG. **9**, in which a movable frame is tilted rearwardly;

FIG. **10***b* is a similar view to FIG. **10***a*, in which a movable frame is restored;

FIG. **11***a* is a cross-sectional view of a chair equipped with a lumbar support unit according to a fifth embodiment of the present invention, in which a movable frame is tilted; and

FIG. **11***b* is a similar view to FIG. **11***a*, in which a movable frame is restored.

DETAILED DESCRIPTION OF THE INVENTION

A chair equipped with a lumbar support unit according to the present invention will be described in further detail by way of example with reference to the accompanying drawings.

Referring to FIG. **1**, there is a chair "A" equipped with a lumbar support unit according to the present invention. As shown in the drawing, the chair "A" includes a L-shaped seat-back shell **1**, which comprises a seat part **10**, and a backrest part **11** integrally formed with the seat part **10**. The seat-back shell **1** is joined to a known chair frame **2** to be tilted rearwardly. When a user inclines the seat-back shell **1** rearwardly so as to take a rest, the seat-back shell **1** is tilted into a proper rearwardly inclined position. On the other hand, when the user erects his/her upper body to work, the seat-back shell **1** is again restored to a normal position by elastic force of a spring (not shown). The backrest part **11** of

the sea-back shell **1** of the chair "A" according to the present invention is provided at its front and lower portion with the lumbar support unit **3**, which is intended to be protruded forwardly when the seat-back shell **1** is tilted rearwardly, and to be resiliently retracted to a normal condition when the seat-back shell **1** is again restored to its normal position.

Although the seat-back shell **1** is shown to be comprised of the seat part **10** and the backrest part **11**, which are integrally formed, the seat part **10** and the backrest part **11** may be formed separately from each other, as indicated by dotted lines in FIG. **1**.

As shown in FIGS. **2** to **3***b*, the lumbar support unit **3** comprises a lumbar plate **31** attached to a lower portion of the backrest part **11** of the seat-back shell **1** which is adapted to resiliently bend or spread out, and an actuating connector **32** for actuating the lumbar plate **31** according to an operation of the seat-back shell **1**, which is connected at its end to an upper end of the lumbar plate **31**, extended downwardly and connected at the other end to the chair frame **2** to which the seat-back shell **1** is joined. The lumbar plate **31** is shaped by a leaf spring having excellent resilience. Although the lumbar plate **31** is shown to be naked showing its structure, the lumbar plate **31** is normally provided at its outer surface with a cover (not shown).

Referring to FIG. **4**, there is shown the lumbar support unit **3**. As shown in the drawing, the lumbar plate **31** of the lumbar support unit **3** is provided at its upper end with a pair of angled brackets **311**, which are extended toward the backrest part **11**. A shaft **312** is rotatably supported by the pair of angled brackets **311**, opposite ends of which are provided with rollers **313** so that the lumbar plate **31** can be smoothly slid upward and downward. The rollers **313** are slidably guided by a pair of guide rails **315**, which are formed at a rail plate **314** attached to the backrest part **11** and longitudinally extended. The lumbar plate **31** is connected at its lower end to a hinge bracket **121** of a support frame **12** attached to the backrest part **11**, and is slidably guided by the rail plate **314** at its upper end.

The support frame **12** is formed at its middle portion with a through hole **122** through which the actuating connector **32** passes, and is coupled at its lower end to a movable frame **21** of the chair frame **2**.

The actuating connector **32** comprises a connecting wire **32***a* which is connected at upper end to the shaft **312** of the lumbar plate **31** and connected at the lower end to a fixed plate **221** rearwardly extended from a fixed frame **22** to which the movable frame **21** of the chair frame **2** is hingedly coupled, and a flexible connecting tube **32***b* into which the connecting wire **32***a* is extended, and which is fixed at its upper end to the backrest part **11** via a holding bracket **327** such that the upper end of the connecting tube **32***b* is positioned at a location somewhat spaced from the upper end of the connecting wire **32***a* and is positioned at its lower end adjacent to an actuating plate **211** of the movable frame **21**.

The connecting wire **32***a* of the fixed plate **221** is provided at its lower end with wire control means **321**, which is capable of controlling a protruding degree of the lumbar plate **31** by increasing or decreasing a length of the connecting wire **32***a*.

As shown in FIG. **5**, the wire control means **321** comprises an adjusting bolt **322** integrally formed with the lower end of the connecting wire **32***a*, and an adjusting nut **323** placed on the fixed plate **221**, into which the adjusting bolt **322** is threaded. Although the adjusting bolt **322** is shown to be provided with a wire-fixing end **324**, which is intended to grip the end of the connecting wire **32***a*, the wire-fixing end **324** can be omitted. With the aid of the wire control means **321**, when the adjusting nut **323** is rotated to raise the adjusting bolt **322**, a length of the connecting wire **32***a* between the fixed plate **221** and the upper end of the lumbar plate **31** is decreased by a length corresponding to a raised height of the adjusting bolt **322**, thereby tightening the connecting wire **32***a* and thus causing the lumbar plate **31** to be resilienty bulged. Accordingly, since the lumbar plate **31** is protruded from a retracted position when the backrest part **11** is tilted rearwardly, the protruded lumbar plate **31** is further resiliently bulged. In contrast, when the adjusting bolt **322** is lowered by the reverse rotation of the adjusting nut **323**, a length of the connecting wire **32***a* between the fixed plate **221** and the upper end of the lumbar plate **31** is increased by a length corresponding to a lowered height of the adjusting bolt **322**, thereby loosening the connecting wire **32***a*. Therefore, the bulged lumbar plate **31** is somewhat reduced in a protruded degree.

The connecting wire **32***a* is passed through a through hole **211***a* of the actuating plate **211** and then fixed to the fixed plate **221** of the fixed frame **22**. The lower end of the connecting tube **32***b* is fixed to a lower surface of the actuating plate **211**. The upper end of the connecting wire **32***a*, which is fixed to the lumbar plate **31**, is positioned to be spaced from the upper end of the connecting tube **32***b* by a certain exposed distance "L" in its uppermost position. It is preferable that the exposed distance "L" of the connecting wire **32***a* is equal to or longer than a vertical travel distance of the actuating plate **211** of the movable frame **21**. If the exposed distance "L" of the connecting wire **32***a* is shorter than the vertical travel distance of the actuating plate **211**, the connecting wire **32***a* is applied with excessive load, causing problems such as breaking of the wire.

As shown in FIG. **6**, the lower end of the connecting tube **32***b* is coupled to the actuating plate **211** in such a way that the lower end of the connecting tube **32***b* is provided with a male threaded portion **325** and the male threaded portion **325** is threaded into two fastening nuts **326** with the actuating tube **211** between the two fastening nuts **326**. On the other hand, the other upper end of the connecting tube **32***b* is coupled to the holding bracket **327** attached to the backrest part **11** in such a way that the upper end of the connecting tube **32***b* is formed with a male threaded portion **325** and the male threaded portion **325** is threaded into two fastening nuts **326** with the holding bracket **327** between the two fastening nuts **326**.

Operations of the chair "A" according to the present invention will now be described. As shown in FIG. **3***a*, when a user inclines the seat-back shell **1** rearwardly to take a rest, both the seat part **10** and the backrest **11** are tilted concurrently. At this point, since the movable frame **21**, on which the seat part **10** is mounted, is inclined downwardly at its rear portion and thus the actuating plate **211** attached to the rear portion of the movable frame **21** is lowered while pushing the lower end of the connecting tube **32***b* of the actuating connector **32**, the connecting wire **32***a* is drawn with respect to the lower end of the connecting tube **32***b*, thereby downwardly pulling the upper end of the lumbar plate **31** to which the upper end of the connecting wire **32***a* is connected. Accordingly, as the upper end of the lumbar plate **31** is pulled down by the tensioned connecting wire **32***a*, the elastic lumbar plate **31** is protruded or bulged forward while the rollers **313** move along the guide rails **315** of the rail plate **314**, thereby snugly supporting a lumbar region of a user. The bulging motion of the lumbar plate **31** is halted and maintained in position when the tilting of the

seat-back shell **1** is completed. As shown in FIG. **3***b*, when the seat-back shell **1** is returned to the normal position, the movable plate **211**, which is in a state of pressing the connecting tube **32***b* of the actuating connector **32**, is raised, so that the tensioned condition of the connecting wire **32***a* is released resulting in raising of the upper end of the connecting wire **32***a*. With the raising of the connecting wire **32***a*, the protruded lumbar plate **31** is spread out by its resilience and restored to the normal almost straight position while the rollers **313** of the lumbar plate **31** move upward along the guide rails **315**.

FIGS. **7***a* and **7***b* show a chair "A" equipped with a lumbar support unit according to a second embodiment of the present invention, which is more simplified by omitting the rollers of the above-described first embodiment. In this embodiment, the lumbar plate **31** is protruded forward when the seat-back shell **1** is tilted rearwardly, and restored to its normal position when the seat-back shell **1** is again erected to be upright, as in the first embodiment.

FIGS. **8***a* and **8***b* show a chair "A" equipped with a lumbar support unit according to a third embodiment of the present invention. In this embodiment, the connecting wire **32***a* of the actuating connector **32** is connected at its upper end to the lower end of the lumbar plate **31**. From the lower end of the lumbar plate **31**, the connecting wire **32***a* is upwardly extended and then curved downwardly through a hole of the backrest part **11**. When the seat-back shell **1** is tilted rearwardly by an upper body of a user, the movable frame **21**, on which the seat part **10** is mounted, is downwardly inclined at its rear portion. Hence, the actuating plate **211** attached to the rear portion of the movable frame **21** is lowered while pushing the lower end of the connecting tube **32***b* of the actuating connector **32**, so that the connecting wire **32***a* is drawn with respect to the lower end of the connecting tube **32***b*, thereby upwardly pulling the lower end of the lumbar plate **31** to which the upper end of the connecting wire **32***a* is connected. Accordingly, as the lower end of the lumbar plate **31** is pulled up by the drawn connecting wire **32***a*, the elastic lumbar plate **31** is protruded forward, thereby snugly supporting a lumbar region of a user. The bulging motion of the lumbar plate **31** is halted and maintained in the position when the tilting of the seat-back shell **1** is completed. On the other hand, when the seat-back shell **1** is returned to the normal position, the movable plate **211**, which is in state of pressing the connecting tube **32***b* of the actuating connector **32**, is raised, so that the tensioned condition of the connecting wire **32***a* is released. Therefore, the protruded lumbar plate **31** is spread out by its resilience and restored to the normal almost straight position.

FIG. **9** shows a chair "A" equipped with a lumbar support unit according to a fourth embodiment of the present embodiment, which is provided with a fixed seat part and a tiltable backrest part which are formed separately from each other. The fixed frame **22**, on which the seat part **10** is mounted, is provided with the movable frame **21** which is hingedly connected thereto at its front end. The movable frame **21** is attached with the separate backrest part **11**. The backrest part **11** is provided at its lower portion with the lumbar support unit **3**, which is adapted to be protruded forwardly when the movable frame **21** is inclined, and is resiliently restored to its normal position when the movable frame **21** is again erected upright.

The lumbar support unit **3** comprises a lumbar plate **31** attached to the lower portion of the elastic backrest part **11**, which can be bulged forwardly, and an actuating connector **32** for causing the lumbar plate **31** to be protruded and spread out according to motion of the movable frame **2**, which is connected at its upper end to the upper end **31***a* of the lumbar plate **31** and extended downwardly. The lower end of the actuating connector **32** is connected to the movable frame **22**, to which the movable frame **2** is hingedly connected.

The actuating connector **32** comprises a connecting wire **32***a* which is connected at its upper end to a upper end of the lumbar plate **31**, and connected at its lower end to a fixed plate **22**, and a flexible connecting tube **32***b* into which the connecting wire **32***a* is extended, and which is fixed at its upper end to the backrest part **11** such that the upper end of the connecting tube **32***b* is positioned at a location spaced from the upper end of the connecting wire **32***a* and is connected at its lower end to a lower portion of the movable frame **21** or the fixed frame **22**. In this embodiment, the lower end of the connecting tube **32***b* is connected to the lower portion of the movable frame **21**. Furthermore, although the actuating connector **32** is illustrated to be comprised of the connecting wire **32***a* and the connecting tube **32***b*, the actuating connector **32** may be comprised of only the connecting wire **32***a*.

The upper end of the connecting wire **32***a*, which is fixed to the lumbar plate **31**, is positioned to be spaced from the upper end of the connecting tube **32***b* by a certain exposed distance "L" in a normal position. It is preferable that the exposed distance "L" of the connecting wire **32***a* is equal to or slightly longer than a maximum spacing "L'" defined between the fixed frame **22** and the movable frame **21** when the movable frame **21** is most inclined. If the exposed distance "L" of the connecting wire **32***a* is shorter than the maximum spacing "L", the connecting wire **32***a* is applied with excessive load, causing problems such as breaking of the wire **32***a*.

Operations of the chair "A" according to the fourth embodiment of the present invention will now be described. When a user inclines the backrest part **11** and thus the movable frame **21** rearwardly to take a rest, the movable frame **21**, which is hingedly connected to fixed frame **22**, is inclined downwardly to cause the spacing "L'" to be longer. At this point, the connecting wire **32***a* is drawn with respect to the lower end of the connecting tube **32***b*, thereby downwardly pulling the upper end of the lumbar plate **31**. Accordingly, as the upper end of the lumbar plate **31** is pulled down by the connecting wire **32***a*, the elastic lumbar plate **31** is protruded or bulged forward, thereby snugly supporting a lumbar region of a user. The bulging motion of the lumbar plate **31** is halted and maintained in the position when the tilting of the backrest part **11** and thus the movable frame **21** is completed. When the movable frame **21** is returned to the normal position, the spacing "L'" is reduced, allowing the tensioned condition of the connecting wire **32***a* to be released. Therefore, the protruded lumbar plate **31** is spread by its resilience and restored to the normal position.

FIGS. **11***a* and **11***b* show a chair "A" according to a fifth embodiment of the present invention, which is substantially similar to the chair of the fourth embodiment except that the upper end of the connecting wire **32***a* of the actuating connector **32** is connected to the lower end of the lumbar plate **31**. In this embodiment, when a user inclines the backrest part **11** and thus the movable frame **21** rearwardly to take a rest, the movable frame **21**, which is hingedly connected to fixed frame **22**, is inclined downwardly to cause the spacing "L'" to be longer. At this point, since the upper end of the connecting wire **32***a* is drawn upwardly, pulling the lower end of the lumbar plate **31** upwardly, the elastic lumbar plate **31** is protruded or bulged forward, thereby snugly supporting a lumbar region of a user. The

bulging motion of the lumbar plate **31** is halted and maintained in position when the tilting of the movable frame **21** is completed. When the movable frame **21** is returned to the normal position, the tensioned condition of the connecting wire **32***a* is released. Therefore, the protruded lumbar plate **31** is spread by its resilience and restored to the normal position.

As described above, the present invention provides a chair equipped with a lumbar support unit, in which the lumbar support unit is automatically protruded or bulged forwardly to snugly support a lumbar region of a user when a backrest part is tilted rearwardly, and restored to its normal position when the backrest part is erected. Accordingly, the chair of the present invention can afford convenient operation and protection of a lumbar region of a user.

Although the preferred embodiments of the present invention have been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

What is claimed is:

1. A chair comprising:

a chair frame, said chair frame comprises a fixed frame having a fixed plate; and a movable frame hingedly connected to the fixed frame and having an actuating plate;

a seat-back member mounted on the chair frame, said seat-back member comprises a seat part and a backrest part which are integrally formed with each other, and which is adapted to be tilted rearwardly and restored to its normal position; and

a lumbar support unit attached to a lower portion of the backrest part which is automatically protruded forwardly when the seat-back member is tilted rearwardly, and is resiliently restored to its normal position when the seat-back member is erected, said lumbar support unit comprises

a lumbar plate which is hingedly connected at one end to the backrest part and is connected at the other cud to the backrest part to be slid up and down, and which is adapted to be protruded forwardly; and

an actuating connector which is connected at one end to the lumbar plate and is connected at the ether end to the chair frame such that the actuating connector causes the lumbar plate to be protruded forwardly when the seat-back member is tilted rearwardly and is resiliently restored to its normal position when the seat-back member is erected, wherein said actuating connector comprises

a connecting wire which is connected at one end to an upper end of the lumbar plate and is connected at the other end to the fixed plate of the fixed frame; and

a connecting tube into which the connecting wire is extended, and which is connected at one end to the backrest part such that the one end of the connecting tube is positioned at a location downwardly spaced from the one end of the connecting wire, and is connected at the other end to the actuating plate of the movable frame, wherein the one end of the connecting wire, which is connected to the lumbar plate, is exposed from the one end of the connecting tube by a certain distance in its normal position, and the exposed distance of the connecting wire is equal to or longer than a distance by which the actuating plate moves downwardly.

2. The chair as set forth in claim **1**, in which the chair frame comprises a fixed frame having a fixed plate, and a movable frame hingedly connected to the fixed frame and having an actuating plate, and the actuating connector comprises:

a connecting wire which is connected at one end to a lower end of the lumbar plate and is connected at the other end to the fixed plate of the fixed frame; and

a connecting tube into which the connecting wire is extended, and which is connected at one end to the backrest part such that the one end of the connecting tube is positioned at a location upwardly spaced from the one end of the connecting wire, and is connected at the other end to the actuating plate of the movable frame.

3. The chair as set forth in claim **1**, in which the lumbar support is provided at its upper end with an angled bracket extended toward the backrest part and supporting a shaft, both ends of which are provided with rollers moving up and down for the sake of smooth motion of the lumbar plate, and the backrest plate is provided a rail plate at a position corresponding to the lumbar support unit, the rail plate being provided at its both sides with guide rails extended downwardly, the rollers being slid up and down along the guide rails of the rail plate.

4. The chair as set forth in claim **1**, in which the connecting wire is provided at one or both ends with wire control means for controlling lengths of the connecting wire exposed from the ends of the connecting tubes.

5. The chair as set forth in claim **4**, in which the wire control means comprises a bolt integrally coupled to the end of the connecting wire, and a fastening nut disposed on the fixed plate and threaded with the male threaded portion of the connecting wire to control the exposed length of the connecting wire by its own rotation.

6. The chair as set forth in claim **1**, in which one or both ends of a connecting tube of the actuating connector are formed at outer surfaces thereof with male threaded portions, and each of the threaded portion of the connecting tube is threaded into two nuts for fastening the male threaded portion.

7. The chair as set forth in claims **1**, in which one or both ends of the connecting tube of the actuating connector are formed at outer surfaces thereof with male threaded portions, and each of the threaded portion of the connecting tube is threaded into two nuts for fastening the male threaded portion.

8. The chair as set form in claim **1**, wherein said lumbar support unit is automatically protruded forwardly only when the seat-back member is tilted rearwardly, and is resiliently restored to its normal position only when the seat-back member is erected.

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